

AIR QUALITY PERMIT

Issued To:	International Malting Company, LLC	Permit: #3238-02
	Great Falls	Application Complete: 07/06/05
	P.O. Box 712	Preliminary Determination Issued: 08/09/05
	Milwaukee, WI 53201	Department's Decision Issued: 08/25/05
		Permit Final: 09/10/05
		AFS: #013-0035

An air quality permit, with conditions, is hereby granted to International Malting Company, LLC – Great Falls (IMC), pursuant to Sections 75-2-204 and 211 of the Montana Code annotated (MCA), as amended, and Administrative Rules of Montana (ARM) 17.8.740, *et seq.*, as amended, for the following:

SECTION I: Permitted Facilities

A. Plant Location

The IMC facility is located approximately 2 miles north of the City of Great Falls, Montana, and approximately ½ mile west of Black Eagle Road. The legal description of the facility site is the NE¼ of the SE¼ of Section 30, Township 21 North, Range 4 East, in Cascade County, Montana.

B. Current Permit Action

On July 6, 2005, the Department of Environmental Quality (Department) received a complete permit application from IMC for the modification of Permit #3238-01. Specifically, under the current permit action IMC proposed the installation and operation of 2 new fabric filter baghouse control units for grain receiving and product load-out operations, respectively. The baghouse controlling grain receiving operations will have a maximum nominal flow rate of 7,250 dry standard cubic feet per minute (dscfm) and a particulate matter with an aerodynamic diameter less than or equal to 10 microns (PM₁₀) emission limit of 0.01 grains per dry standard cubic feet (gr/dscf) resulting in the potential to emit 2.72 tons per year (tpy) of PM₁₀. The product load-out baghouse will have a maximum nominal flow rate of 3,480 dscfm and a PM₁₀ emission limit of 0.01 gr/dscf, resulting in the potential to emit 1.31 tpy of PM₁₀.

In addition, the main process baghouse (BF01) flow rate used in the ambient air quality impact analysis conducted for Permit #3238-01 was incorrectly reported as 59,335 actual cubic feet per minute (acfm). The correct flow rate for the affected unit under Permit #3238-01 and the current permit action is 77,404 acfm (66,800 dscfm). The modeling analysis submitted for the current permit action addresses this correction. A summary of the ambient air quality impact analysis is contained in Section VI of the Permit Analysis to this permit.

SECTION II: Conditions and Limitations

A. Operational Requirements

1. Malt and salable malt by-product production shall be limited to 16,000,000 bushels during any rolling 12-month time period (ARM 17.8.749).

2. IMC shall not receive more than 456,000 tons of barley during any rolling 12-month time period (ARM 17.8.749).
3. IMC shall install, operate, and maintain 3 separate fabric filter baghouses, including BF01 – Main Process Baghouse, BF02 – Grain Receiving Baghouse, and BF03 – Product Load-Out Baghouse, for the control of particulate matter (PM) and PM₁₀ from affected operations (ARM 17.8.752).
4. IMC shall house all barley preparation processes within the headhouse and shall utilize fabric filter baghouse control for emissions from the barley preparation processes (ARM 17.8.752).
5. IMC shall unload all barley shipments to underground hoppers. IMC shall utilize fabric filter baghouse emission control on the hoppers (ARM 17.8.752).
6. IMC shall load all malt and salable malt by-product for shipment via covered conveyors. IMC shall utilize fabric filter baghouse emission control on the conveyors (ARM 17.8.752).
7. Each material transfer point for grain receiving and off-loading shall incorporate an enclosure (at least 3-sided) for fugitive emission control (ARM 17.8.752).
8. IMC shall not cause or authorize the production, handling, storage, or transportation of any material without taking reasonable precautions to control emissions of particulate matter (ARM 17.8.308).
9. IMC shall not cause or authorize the use of any street, road, or parking lot without taking reasonable precautions to control emissions of airborne particulate matter (ARM 17.8.308).
10. IMC shall treat all unpaved portions of the haul roads, access roads, parking lots, or general plant area with water and/or chemical dust suppressant as necessary to maintain compliance with the reasonable precautions limitation in Section II.A.8 and II.A.9 (ARM 17.8.752).
11. Elemental sulfur burning for kiln operations shall be limited to 200 pounds of sulfur per kiln batch (ARM 17.8.749).
12. Total elemental sulfur burning for kiln operations (cumulative for all three kilns) shall be limited to 146,000 pounds during any rolling 12-month time period (ARM 17.8.749).
13. Total elemental sulfur burning for kiln operations (cumulative for all three kilns) shall not exceed 2190 hours during any rolling 12-month time period (ARM 17.8.749).
14. IMC shall burn only pipeline quality natural gas for the kiln operations process heaters (ARM 17.8.752).
15. IMC shall utilize dry low NO_x combustion technology to control emissions from the HEATEC Heater #1 (25 MMBtu/hr), the HEATEC Heater #2 (42 MMBtu/hr), and the Future Plant Heater (48 MMBtu/hr) (ARM 17.8.752).

16. The design of each kiln shall include a screw auger for movement of malt product/by-product out of the kiln and the kiln heat exchanger shall be located at the top of each kiln (ARM 17.8.749).
17. Each fabric filter baghouse (BF01, BF02, and BF03) shall incorporate an unobstructed vertical exhaust stack (ARM 17.8.749).

B. Emission Limitations

1. PM₁₀ emissions from the main fabric filter baghouse (BF01) shall be limited to the following (ARM 17.8.749):
 - i. 0.010 gr/dscf of air-flow; and
 - ii. 5.73 lb/hr
2. PM₁₀ emissions from the grain receiving fabric filter baghouse (BF02) shall be limited to the following (ARM 17.8.749):
 - i. 0.010 gr/dscf of air-flow; and
 - ii. 0.62 lb/hr
3. PM₁₀ emissions from the product load-out fabric filter baghouse (BF03) shall be limited to the following (ARM 17.8.749):
 - i. 0.010 gr/dscf of air-flow; and
 - ii. 0.30 lb/hr
4. Emissions from the MOCO process heater #1 (53.4 MMBtu/hr capacity) shall not exceed the following (ARM 17.8.749):

Oxides of nitrogen (NO _x)	5.24 lb/hr calculated on a 1-hour averaging period
Carbon monoxide (CO)	4.40 lb/hr calculated on a 1-hour averaging period
5. Emissions from the Johnston process heater #1 (25.12 MMBtu/hr capacity) shall not exceed the following (ARM 17.8.749):

NO _x	2.46 lb/hr calculated on a 1-hour averaging period
CO	2.07 lb/hr calculated on a 1-hour averaging period
6. Emissions from the Johnston process heater #2 (25.12 MMBtu/hr capacity) shall not exceed the following (ARM 17.8.749):

NO _x	2.46 lb/hr calculated on a 1-hour averaging period
CO	2.07 lb/hr calculated on a 1-hour averaging period
7. Emissions from the HEATEC process heater #1 (25.0 MMBtu/hr capacity) shall not exceed the following (ARM 17.8.749):

NO _x	1.23 lb/hr calculated on a 1-hour averaging period
CO	2.06 lb/hr calculated on a 1-hour averaging period

8. Emissions from the HEATEC process heater #2 (42.0 MMBtu/hr capacity) shall not exceed the following (ARM 17.8.749):

NOx	2.06 lb/hr calculated on a 1-hour averaging period
CO	3.46 lb/hr calculated on a 1-hour averaging period

9. Emissions from the Plant Heater (48.0 MMBtu/hr capacity) shall not exceed the following (ARM 17.8.749):

NOx	2.35 lb/hr calculated on a 1-hour averaging period
CO	3.95 lb/hr calculated on a 1-hour averaging period

10. Sulfur dioxide (SO₂) emissions from each kiln shall be limited to 33.33 lb/hr during elemental sulfur burning (ARM 17.8.749).
11. IMC shall not cause or authorize emissions to be discharged into the outdoor atmosphere from any sources installed after November 23, 1968, that exhibit an opacity of 20% or greater averaged over six consecutive minutes (ARM 17.8.304).
12. IMC shall not cause or authorize any fugitive emissions to be discharged into the outdoor atmosphere that exhibit an opacity of 20% or greater averaged over six consecutive minutes (ARM 17.8.308).

C. Testing Requirements

1. Within 60 days after achieving the maximum production rate, but not later than 180 days after initial start-up of operations, IMC shall conduct Method 5 and Method 9 performance source testing, or another Method as may be approved by the Department, on the main process baghouse (BF01) and verify compliance with the particulate and opacity limitations in Section II.B.1 and Section II.B.11, respectively. After the initial source tests, additional source testing shall be conducted on an annual basis, or according to another source testing/monitoring schedule as may be approved by the Department (ARM 17.8.105 and ARM 17.8.749).
2. Within 60 days after achieving the maximum production rate, but not later than 180 days after initial start-up of operations, IMC shall conduct Method 5 and Method 9 performance source testing, or another Method as may be approved by the Department, on the grain receiving baghouse (BF02) and verify compliance with the particulate and opacity limitations in Section II.B.2 and Section II.B.11, respectively. After the initial source tests, additional source testing shall be conducted on an every two-year basis, or according to another source testing/monitoring schedule as may be approved by the Department (ARM 17.8.105 and ARM 17.8.749).
3. Within 60 days after achieving the maximum production rate, but not later than 180 days after initial start-up of operations, IMC shall conduct Method 5 and Method 9 performance source testing, or another Method as may be approved by the Department, on the product load-out baghouse (BF03) and verify compliance with the particulate and opacity limitations in Section II.B.3 and Section II.B.11, respectively. After the initial source tests, additional source testing shall be conducted on an every five-year basis, or according to another source testing/monitoring schedule as may be approved by the Department (ARM 17.8.105 and ARM 17.8.749).

4. Within 60 days after achieving the maximum production rate, but not later than 180 days after initial start-up, IMC shall conduct performance source testing for NO_x and CO, concurrently, on the MOCO process heater #1 and verify compliance with the emission limitations in Section II.B.4. After the initial source tests, additional source testing shall be conducted as required by the Department (ARM 17.8.105 and ARM 17.8.749).
5. Within 60 days after achieving the maximum production rate, but not later than 180 days after initial start-up, IMC shall conduct performance source testing for NO_x and CO, concurrently, on the Johnston process heater #1 and verify compliance with the emission limitations in Section II.B.5. After the initial source tests, additional source testing shall be conducted as required by the Department (ARM 17.8.105 and ARM 17.8.749).
6. Within 60 days after achieving the maximum production rate, but not later than 180 days after initial start-up, IMC shall conduct performance source testing for NO_x and CO, concurrently, on the Johnston process heater #2 and verify compliance with the emission limitations in Section II.B.6. After the initial source tests, additional source testing shall be conducted as required by the Department (ARM 17.8.105 and ARM 17.8.749).
7. Within 60 days after achieving the maximum production rate, but not later than 180 days after initial start-up, IMC shall conduct performance source testing for NO_x and CO, concurrently, on the HEATEC process heater #1 and verify compliance with the emission limitations in Section II.B.7. After the initial source tests, additional source testing shall be conducted as required by the Department (ARM 17.8.105 and ARM 17.8.749).
8. Within 60 days after achieving the maximum production rate, but not later than 180 days after initial start-up, IMC shall conduct performance source testing for NO_x and CO, concurrently, on the HEATEC process heater #2 and verify compliance with the emission limitations in Section II.B.8. After the initial source tests, additional source testing shall be conducted as required by the Department (ARM 17.8.105 and ARM 17.8.749).
9. Within 60 days after achieving the maximum production rate, but not later than 180 days after initial start-up, IMC shall conduct performance source testing for NO_x and CO, concurrently, on the Plant Heater and verify compliance with the emission limitations in Section II.B.9. After the initial source tests, additional source testing shall be conducted as required by the Department (ARM 17.8.105 and ARM 17.8.749).
10. Within 60 days after achieving the maximum production rate, but not later than 180 days after initial start-up of operations, IMC shall conduct performance source testing on the kiln stacks and verify compliance with the SO₂ emission limit in Section II.B.10. The source test shall be conducted while sulfur is being burned in the batch process. After the initial source test, additional source testing shall be conducted as required by the Department (ARM 17.8.105 and ARM 17.8.749).
11. All compliance source tests shall conform to the requirements of the Montana Source Test Protocol and Procedures Manual (ARM 17.8.106).

12. The Department may require further testing (ARM 17.8.105).

D. Operational Reporting Requirements

1. IMC shall supply the Department with annual production information for all emission points, as required by the Department in the annual emission inventory request. The request will include, but is not limited to, all sources of emissions identified in the emission inventory contained in the permit analysis.

Production information shall be gathered on a calendar-year basis and submitted to the Department by the date required in the emission inventory request. Information shall be in the units required by the Department. This information may be used to calculate operating fees, based on actual emissions from the facility, and/or to verify compliance with permit limitations (ARM 17.8.505).

2. IMC shall notify the Department of any construction or improvement project conducted pursuant to ARM 17.8.745(1), that would include a change in control equipment, stack height, stack diameter, stack flow, stack gas temperature, source location or fuel specifications, or would result in an increase in source capacity above its permitted operation or the addition of a new emission unit.

The notice must be submitted to the Department, in writing, 10 days prior to start up or use of the proposed de minimis change, or as soon as reasonably practicable in the event of an unanticipated circumstance causing the de minimis change, and must include the information requested in ARM 17.8.745(l)(d) (ARM 17.8.745).

3. All records compiled in accordance with this permit must be maintained by IMC as a permanent business record for at least five years following the date of the measurement, must be available at the plant site for inspection by the Department, and must be submitted to the Department upon request (ARM 17.8.749).
4. IMC shall document, by month, the total amount (in tons) of malt and salable malt by-product produced annually at the facility. By the 25th day of each month, IMC shall total the malt and salable malt by-product produced for the previous month. The monthly information will be used to verify compliance with the rolling 12-month limitation in Section II.A.1. The information for each of the previous months shall be submitted along with the annual emission inventory (ARM 17.8.749).
5. IMC shall document, by month, the total amount (tons) of barley received annually by the facility. By the 25th day of each month, IMC shall total the amount (tons) of barley received during the previous month. The monthly information will be used to verify compliance with the rolling 12-month limitation in Section II.A.2. The information for each of the previous months shall be submitted along with the annual emission inventory (ARM 17.8.749).
6. IMC shall document, per kiln batch, the total amount (pounds) of elemental sulfur burned. IMC shall maintain on-site records of the amount of sulfur burned per kiln batch to verify compliance with the limitation in Section II.A.11. A written report of the compliance verification shall be submitted with the annual emission inventory (ARM 17.8.749).

7. IMC shall document, by month, the total amount (pounds) of elemental sulfur burned for kiln operations. By the 25th day of each month, IMC shall total the amount (pounds) of elemental sulfur burned during the previous month. The monthly information will be used to verify compliance with the rolling 12-month limitation in Section II.A.12. The information for each of the previous months shall be submitted along with the annual emission inventory (ARM 17.8.749).
8. IMC shall document, by month, the total hours of elemental sulfur burning for kiln operations. By the 25th day of each month, IMC shall total the hours of elemental sulfur burning during the previous month. The monthly information will be used to verify compliance with the rolling 12-month limitation in Section II.A.13. The information for each of the previous months shall be submitted along with the annual emission inventory (ARM 17.8.749).

E. Notification

1. Within 30 days before or after commencement of construction of Phase I of the barley malt manufacturing plant operations, IMC shall notify the Department of the date of commencement of construction (ARM 17.8.749).
2. Within 15 days before or after actual startup of Phase I operations, IMC shall notify the Department of the date of actual startup (ARM 17.8.749).
3. Within 30 days before or after commencement of construction of Phase II of the barley malt manufacturing plant operations, IMC shall notify the Department of the date of commencement of construction (ARM 17.8.749).
4. Within 15 days before or after actual startup of Phase II operations, IMC shall notify the Department of the date of actual startup (ARM 17.8.749).

SECTION III: General Conditions

- A. Inspection – IMC shall allow the Department’s representatives access to the source at all reasonable times for the purpose of making inspections or surveys, collecting samples, obtaining data, auditing any monitoring equipment (CEMS, CERMS) or observing any monitoring or testing, and otherwise conducting all necessary functions related to this permit.
- B. Waiver – The permit and the terms, conditions, and matters stated herein shall be deemed accepted if IMC fails to appeal as indicated below.
- C. Compliance with Statutes and Regulations – Nothing in this permit shall be construed as relieving IMC of the responsibility for complying with any applicable federal or Montana statute, rule, or standard, except as specifically provided in ARM 17.8.740, *et seq.* (ARM 17.8.756).
- D. Enforcement – Violations of limitations, conditions and requirements contained herein may constitute grounds for permit revocation, penalties or other enforcement action as specified in Section 75-2-401, *et seq.*, MCA.

- E. Appeals – Any person or persons jointly or severally adversely affected by the Department’s decision may request, within 15 days after the Department renders its decision, upon affidavit setting forth the grounds therefore, a hearing before the Board of Environmental Review (Board). A hearing shall be held under the provisions of the Montana Administrative Procedures Act. The filing of a request for a hearing does not stay the Department’s decision, unless the Board issues a stay upon receipt of a petition and a finding that a stay is appropriate under Section 75-2-211(11)(b), MCA. The issuance of a stay on a permit by the Board postpones the effective date of the Department’s decision until conclusion of the hearing and issuance of a final decision by the Board. If a stay is not issued by the Board, the Department’s decision on the application is final 16 days after the Department’s decision is made.
- F. Permit Inspection – As required by ARM 17.8.755, Inspection of Permit, a copy of the air quality permit shall be made available for inspection by the Department at the location of the source.
- G. Permit Fee – Pursuant to Section 75-2-220, MCA, as amended by the 1991 Legislature, failure to pay the annual operation fee by IMC may be grounds for revocation of this permit, as required by that section and rules adopted thereunder by the Board.
- H. Construction Commencement – Construction must begin within three years of permit issuance and proceed with due diligence until the project is complete or the permit shall be revoked (ARM 17.8.762).

Permit Analysis
International Malting Company, LLC – Great Falls
Permit #3238-02

I. Introduction/Process Description

A. Permitted Equipment

International Malting Company, LLC – Great Falls (IMC) operates a barley malt manufacturing plant with an initial Phase I malt and salable malt by-product production capacity of 10 million bushels per year and a final plant (after Phase II) capacity of 16 million bushels per year. The IMC plant incorporates the following equipment:

- 4 steeping vessels, each 20-meters in diameter;
- 8 germinating vessels, each 31-meters in diameter;
- 3 natural gas fired kilns incorporating the 6 permitted process heaters with a maximum rated heat input of 218.64 million British thermal units per hour (MMBtu/hr) heat input capacity;
- A barley washer;
- Eighty silos for storing barley and malt products;
- 3 process fabric filter baghouses including a main process fabric filter baghouse (BF01) with an air-flow capacity of 66,800 dry standard cubic feet per minute (dscfm), a grain (barley) receiving fabric filter baghouse (BF02) with an air-flow capacity of 7,250 dscfm, and a product load-out fabric filter baghouse (BF03) with an air-flow capacity of 3,480 dscfm. Each process fabric filter baghouse incorporates an unobstructed vertical exhaust stack (i.e., no “rain cap” or elbow); and
- Associated equipment.

The above list of equipment includes all proposed equipment for Phase I and Phase II operations.

B. Source Description

The IMC facility is located approximately 2 miles north of the City of Great Falls, Montana, and approximately ½ mile west of Black Eagle Road. The legal description of the facility site is the NE¼ of the SE¼ of Section 30, Township 21 North, Range 4 East, in Cascade County, Montana.

Malt is the processed form of barley grain and the basic ingredient in the production of beer. Malting is the process by which barley is transformed into malt. The process begins with “steeping” or soaking of clean barley kernels in large tanks of water called “steeping vessels.” After steeping, the barley is then removed from the steeping vessels and placed in a germinating vessel. After a period of germination, the barley is dried and roasted in a kiln to stop the germination process and reduce the moisture content of the product, now considered malt. At this stage of the process the malt product can be easily stored and/or shipped to various locations for further processing.

Construction and operation of the proposed malting plant will occur in 2 phases. After construction of Phase I, the malting plant will have the capacity to produce from 8 to 10 million bushels of malt per year. After construction of Phase II, the malting plant capacity will increase to a maximum of 16 million bushels of malt per year. IMC will commence Phase II operations within three years of the commencement of Phase I operations. The entire malting plant encompasses approximately 10 acres of land.

C. Permit History

On May 17, 2003, IMC was issued final Montana Air Quality Permit **#3238-00** for the operation of a barley malt manufacturing plant with an initial Phase I malt and salable malt by-product production capacity of 10 million bushels per year and a final plant (after Phase II) capacity of 16 million bushels per year. The initially permitted IMC plant incorporated the following equipment:

- 4 steeping vessels, each 20-meters in diameter
- 8 germinating vessels, each 31-meters in diameter
- 3 natural gas fired kilns incorporating 12 primary process heaters rated at 19.1 million British thermal units per hour (MMBtu/hr) heat input capacity per process heater and 2 natural gas fired booster process heaters rated at 21 MMBtu/hr and 38 MMBtu/hr heat input capacity, respectively
- A barley washer
- Eighty silos for storing barley and malt products
- 8 process fabric filter baghouses (Baghouse #1 through Baghouse #8)
- Associated equipment

In addition, potential emissions from the initially proposed and permitted plant exceeded the applicable major source Title V permitting thresholds; therefore, on February 26, 2005, IMC was issued final and effective Title V Operating Permit **#OP3238-00**.

On April 12, 2005, the Department of Environmental Quality (Department) received a complete application for the modification of IMC's Montana Air Quality Permit (MAQP) #3238-00. Specifically, the modification included the replacement of 8 fabric filter baghouses (total air-flow capacity of 215,000 dscfm) with a single fabric filter baghouse (air-flow capacity of 66,800 dscfm); replacement of the 14 previously permitted process and booster heaters (total heat input capacity 288.2 MMBtu/hr) with six proposed process heaters (total heat input capacity of 218.64 MMBtu/hr); modification of the heating system from air-to-air heat exchangers to air-to-glycol heat exchangers; change in plant layout and configuration; increase in the allowable fabric filter baghouse grain loading limit from 0.005 grains per dry standard cubic feet (gr/dscf) to 0.010 gr/dscf; and a reduction in the allowable amount of elemental sulfur (S) combusted per batch of malt from 500 pounds of S per batch (lb/batch) to 200 lb S/batch.

Prior to this permit action, potential oxides of nitrogen (NO_x), carbon monoxide (CO), and particulate matter/particulate matter with an aerodynamic diameter less than or equal to 10 microns (PM/PM₁₀) emissions from IMC facility operations exceeded applicable Title V major source permitting thresholds. The changes resulted in a reduction in total facility potential emissions of all regulated pollutants to a level less than Title V major source permitting thresholds. Therefore, the permit action resulted in IMC being permitted as a minor source of emissions, as defined under the Title V permitting program. On June 21, 2005, the Department revoked IMC's Title V operating permit.

Finally, IMC requested that the Department remove the kilns from the emission inventory as potential PM/PM₁₀ emitters. The kilns were re-designed from what was originally analyzed and permitted and, according to IMC, no particulate emissions would result from the newly designed kiln operations. Because IMC was unable to provide technical information supporting this claim and because published information contained in the Environmental Protection Agency's (EPA), AP-42, Compilation of Air Pollutant Emissions Factors, indicated that the kiln operations do in fact emit PM/PM₁₀, the Department denied this request and maintained kiln PM/PM₁₀ emissions in the emission inventory under the permit action. Permit **#3238-01** replaced Permit #3238-00.

D. Current Permit Action

On July 6, 2005, the Department received a complete permit application from IMC for the modification of Permit #3238-01. Specifically, under the current permit action IMC proposed the installation and operation of 2 new fabric filter baghouse control units for grain receiving and product load-out operations, respectively. The baghouse controlling grain receiving operations will have a maximum nominal flow rate of 7250 dry standard cubic feet per minute (dscfm) and a particulate matter with an aerodynamic diameter less than or equal to 10 microns (PM₁₀) emission limit of 0.01 grains per dry standard cubic feet (gr/dscf) resulting in the potential to emit 2.72 tons per year (tpy) of PM₁₀. The product load-out baghouse will have a maximum nominal flow rate of 3480 dscfm and a PM₁₀ emission limit of 0.01 gr/dscf, resulting in the potential to emit 1.31 tpy of PM₁₀.

In addition, the main process baghouse (BF01) flow rate used in the ambient air quality impact analysis conducted for Permit #3238-01 was incorrectly reported as 59,335 actual cubic feet per minute (acfm). The correct flow rate for the affected unit under Permit #3238-01 and the current permit action is 77,404 acfm (66,800 dscfm). The modeling analysis submitted for the current permit action addresses this correction. A summary of the ambient air quality impact analysis is contained in Section VI of the Permit Analysis to this permit.

Further, on August 22, 2005, the Department received comments from IMC on the Department's preliminary determination (PD). Specifically, IMC requested the removal of the 1-hour averaging time period requirement for the applicable baghouse pound per hour (lb/hr) emission rate limits and the removal of the applicable baghouse flow-rate limitations included in the PD.

Based on the information contained in the comment letter, the Department recognized that the 1-hr averaging times for the lb/hr applicable baghouse emission limits have the effect of creating an overly stringent compliance demonstration for the affected units, in this case. Further, because the permit imposes grain loading and lb/hr emission limits on the baghouse(s) and because these limits together ensure that compliant actual emissions will not exceed emissions analyzed under the ambient air quality impact analysis conducted for the permit modification, the Department determined that the baghouse flow-rate limitations represent redundant permit requirements, in this case. Therefore, the Department modified the compliance source test requirement for the affected units to specify that the testing, including averaging times, be conducted pursuant to Method 5 and removed the subject baghouse flow-rate conditions under the Department's Decision (DD). Permit **#3238-02** replaces Permit #3238-01.

E. Additional Information

Additional information, such as applicable rules and regulations, Best Available Control Technology (BACT)/Reasonably Available Control Technology (RACT) determinations, air quality impacts, and environmental assessments, is included in the analysis associated with each change to the permit.

II. Applicable Rules and Regulations

The following are partial explanations of some applicable rules and regulations that apply to the facility. The complete rules are stated in the Administrative Rules of Montana (ARM) and are available, upon request, from the Department. Upon request, the Department will provide references for location of complete copies of all applicable rules and regulations or copies where appropriate.

A. ARM 17.8, Subchapter 1 – General Provisions, including but not limited to:

1. ARM 17.8.101 Definitions. This rule includes a list of applicable definitions used in this chapter, unless indicated otherwise in a specific subchapter.
2. ARM 17.8.105 Testing Requirements. Any person or persons responsible for the emission of any air contaminant into the outdoor atmosphere shall, upon written request of the Department, provide the facilities and necessary equipment (including instruments and sensing devices), and shall conduct test, emission or ambient, for such periods of time as may be necessary using methods approved by the Department.
3. ARM 17.8.106 Source Testing Protocol. The requirements of this rule apply to any emission source testing conducted by the Department, any source, or other entity as required by any rule in this chapter, or any permit or order issued pursuant to this chapter, or the provisions of the Clean Air Act of Montana, 75-2-101, *et seq.*, Montana Code Annotated (MCA).

IMC shall comply with the requirements contained in the Montana Source Test Protocol and Procedures Manual, including, but not limited, using the proper test methods and supplying the required reports. A copy of the Montana Source Test Protocol and Procedures Manual is available from the Department upon request.

4. ARM 17.8.110 Malfunctions. (2) The Department must be notified promptly by telephone whenever a malfunction occurs that can be expected to create emissions in excess of any applicable emission limitation or to continue for a period greater than four hours.
5. ARM 17.8.111 Circumvention. (1) No person shall cause or permit the installation or use of any device or any means that, without resulting in reduction of the total amount of air contaminant emitted, conceals or dilutes an emission of air contaminant that would otherwise violate an air pollution control regulation. (2) No equipment that may produce emissions shall be operated or maintained in such a manner as to create a public nuisance.

B. ARM 17.8, Subchapter 2 – Ambient Air Quality, including, but not limited to the following:

1. ARM 17.8.204 Ambient Air Monitoring
2. ARM 17.8.210 Ambient Air Quality Standards for Sulfur Dioxide
3. ARM 17.8.211 Ambient Air Quality Standards for Nitrogen Dioxide
4. ARM 17.8.212 Ambient Air Quality Standards for Carbon Monoxide
5. ARM 17.8.220 Ambient Air Quality Standard for Settled Particulate Matter
6. ARM 17.8.221 Ambient Air Quality Standard for Visibility
7. ARM 17.8.223 Ambient Air Quality Standard for PM₁₀

IMC must maintain compliance with the applicable ambient air quality standards.

C. ARM 17.8, Subchapter 3 – Emission Standards, including, but not limited to:

1. ARM 17.8.304 Visible Air Contaminants. This rule requires that no person may cause or authorize emissions to be discharged into the outdoor atmosphere from any source installed after November 23, 1968, that exhibit an opacity of 20% or greater averaged over six consecutive minutes.

2. ARM 17.8.308 Particulate Matter, Airborne. (1) This rule requires an opacity limitation of 20% for all fugitive emission sources and that reasonable precautions be taken to control emissions of airborne particulate matter. (2) Under this rule, IMC shall not cause or authorize the use of any street, road, or parking lot without taking reasonable precautions to control emissions of airborne particulate matter.
3. ARM 17.8.309 Particulate Matter, Fuel Burning Equipment. This rule requires that no person shall cause, allow, or permit to be discharged into the atmosphere particulate matter caused by the combustion of fuel in excess of the amount determined by this rule.
4. ARM 17.8.310 Particulate Matter, Industrial Process. This rule requires that no person shall cause, allow, or permit to be discharged into the atmosphere particulate matter in excess of the amount set forth in this rule.
5. ARM 17.8.322 Sulfur Oxide Emissions--Sulfur in Fuel. This rule requires that no person shall burn liquid, solid, or gaseous fuel in excess of the amount set forth in this rule.
6. ARM 17.8.324 Hydrocarbon Emissions--Petroleum Products. (3) No person shall load or permit the loading of gasoline into any stationary tank with a capacity of 250 gallons or more from any tank truck or trailer, except through a permanent submerged fill pipe, unless such tank is equipped with a vapor loss control device as described in (1) of this rule.
7. ARM 17.8.340 Standard of Performance for New Stationary Sources and Emission Guidelines for Existing Sources. This rule incorporates, by reference, 40 CFR 60, Standards of Performance for New Stationary Sources (NSPS). This facility is not an NSPS affected source because it does not meet the definition of any NSPS subpart defined in 40 CFR 60.

40 CFR 60, Subpart DD, Standard of Performance for Grain Elevators. This subpart does not apply to the proposed facility because the facility does not meet or exceed the grain storage capacity of an affected source as defined in this subpart.

D. ARM 17.8, Subchapter 5 – Air Quality Permit Application, Operation and Open Burning Fees, including, but not limited to:

1. ARM 17.8.504 Air Quality Permit Application Fees. This rule requires that an applicant submit an air quality permit application fee concurrent with the submittal of an air quality permit application. A permit application is incomplete until the proper application fee is paid to the Department. IMC submitted the appropriate permit application fee for the current permit action.
2. ARM 17.8.505 When Permit Required--Exclusions. An annual air quality operation fee must, as a condition of continued operation, be submitted to the Department by each source of air contaminants holding an air quality permit (excluding an open burning permit) issued by the Department. The air quality operation fee is based on the actual or estimated actual amount of air pollutants emitted during the previous calendar year.

An air quality operation fee is separate and distinct from an air quality permit application fee. The annual assessment and collection of the air quality operation fee, described above, shall take place on a calendar-year basis. The Department may insert into any final permit issued after the effective date of these rules, such conditions as may be necessary to require the payment of an air quality operation fee on a calendar-year basis, including provisions that prorate the required fee amount.

- E. ARM 17.8, Subchapter 7 – Permit, Construction and Operation of Air Contaminant Sources, including, but not limited to:
1. ARM 17.8.740 Definitions. This rule is a list of applicable definitions used in this chapter, unless indicated otherwise in a specific subchapter.
 2. ARM 17.8.743 Montana Air Quality Permits--When Required. This rule requires a facility to obtain an air quality permit or permit alteration if they construct, alter or use any air contaminant sources that have the Potential to Emit (PTE) greater than 25 tons per year of any pollutant. IMC has the PTE more than 25 tons per year of total PM, PM₁₀, sulfur dioxide (SO₂), NO_x, and CO; therefore, an air quality permit is required.
 3. ARM 17.8.744 Montana Air Quality Permits--General Exclusions. This rule identifies the activities that are not subject to the Montana Air Quality Permit program.
 4. ARM 17.8.745 Montana Air Quality Permits--Exclusion for De Minimis Changes. This rule identifies the de minimis changes at permitted facilities that are not subject to the Montana Air Quality Permit Program.
 5. ARM 17.8.748 New or Modified Emitting Units--Permit Application Requirements. (1) This rule requires that a permit application be submitted prior to installation, alteration, or use of a source. IMC submitted the required permit application for the current permit action. (7) This rule requires that the applicant notify the public by means of legal publication in a newspaper of general circulation in the area affected by the application for a permit. IMC submitted an affidavit of publication of public notice for the July 3, 2005, issue of the *Great Falls Tribune*, a newspaper of general circulation in the Town of Great Falls in Cascade County, Montana, as proof of compliance with the public notice requirements.
 6. ARM 17.8.749 Conditions for Issuance or Denial of Permit. This rule requires that the permits issued by the Department must authorize the construction and operation of the facility or emitting unit subject to the conditions in the permit and the requirements of this subchapter. This rule also requires that the permit must contain any conditions necessary to assure compliance with the Federal Clean Air Act (FCAA), the Clean Air Act of Montana, and rules adopted under those acts.
 7. ARM 17.8.752 Emission Control Requirements. This rule requires a source to install the maximum air pollution control capability that is technically practicable and economically feasible, except that BACT shall be utilized. The required BACT analysis is included in Section III of this permit analysis.
 8. ARM 17.8.755 Inspection of Permit. This rule requires that air quality permits shall be made available for inspection by the Department at the location of the source.
 9. ARM 17.8.756 Compliance with Other Requirements. This rule states that nothing in the permit shall be construed as relieving IMC of the responsibility for complying with any applicable federal or Montana statute, rule, or standard, except as specifically provided in ARM 17.8.740, *et seq.*
 10. ARM 17.8.759 Review of Permit Applications. This rule describes the Department's responsibilities for processing permit applications and making permit decisions on those permit applications that do not require the preparation of an environmental impact statement.

11. ARM 17.8.762 Duration of Permit. An air quality permit shall be valid until revoked or modified, as provided in this subchapter, except that a permit issued prior to construction of a new or altered source may contain a condition providing that the permit will expire unless construction is commenced within the time specified in the permit, which in no event may be less than one year after the permit is issued.
 12. ARM 17.8.763 Revocation of Permit. An air quality permit may be revoked upon written request of the permittee, or for violations of any requirement of the Clean Air Act of Montana, rules adopted under the Clean Air Act of Montana, the FCAA, rules adopted under the FCAA, or any applicable requirement contained in the Montana State Implementation Plan (SIP).
 13. ARM 17.8.764 Administrative Amendment to Permit. An air quality permit may be amended for changes in any applicable rules and standards adopted by the Board of Environmental Review (Board) or changed conditions of operation at a source or stack that do not result in an increase of emissions as a result of those changed conditions. The owner or operator of a facility may not increase the facility's emissions beyond permit limits unless the increase meets the criteria in ARM 17.8.745 for a de minimis change not requiring a permit, or unless the owner or operator applies for and receives another permit in accordance with ARM 17.8.748, ARM 17.8.749, ARM 17.8.752, ARM 17.8.755, and ARM 17.8.756, and with all applicable requirements in ARM Title 17, Chapter 8, Subchapters 8, 9, and 10.
 14. ARM 17.8.765 Transfer of Permit. This rule states that an air quality permit may be transferred from one person to another if written notice of Intent to Transfer, including the names of the transferor and the transferee, is sent to the Department.
- F. ARM 17.8, Subchapter 8 – Prevention of Significant Deterioration of Air Quality, including, but not limited to:
1. ARM 17.8.801 Definitions. This rule is a list of applicable definitions used in this subchapter.
 2. ARM 17.8.818 Review of Major Stationary Sources and Major Modifications--Source Applicability and Exemptions. The requirements contained in ARM 17.8.819 through ARM 17.8.827 shall apply to any major stationary source and any major modification, with respect to each pollutant subject to regulation under the FCAA that it would emit, except as this subchapter would otherwise allow.
- This facility is not a major stationary source since this facility is not a listed source and the facility's potential to emit is below 250 tons per year of any pollutant (excluding fugitive emissions).
- G. ARM 17.8, Subchapter 12 – Operating Permit Program Applicability, including, but not limited to:
1. ARM 17.8.1201 Definitions. (23) Major Source under Section 7412 of the FCAA is defined as any source having:
 - a. PTE > 100 tons/year of any pollutant;

- b. PTE > 10 tons/year of any one Hazardous Air Pollutant (HAP), PTE > 25 tons/year of a combination of all HAPs, or a lesser quantity as the Department may establish by rule; or
 - c. PTE > 70 tons/year of PM₁₀ in a serious PM₁₀ nonattainment area.
- 2. ARM 17.8.1204 Air Quality Operating Permit Program. (1) Title V of the FCAA amendments of 1990 requires that all sources, as defined in ARM 17.8.1204(1), obtain a Title V Operating Permit. In reviewing and issuing Air Quality Permit #3238-02 for IMC, the following conclusions were made:
 - a. The facility's PTE is less than 100 tons/year for all regulated pollutants.
 - b. The facility's PTE is less than 10 tons/year for any one HAP and less than 25 tons/year for all HAPs.
 - c. This source is not located in a serious PM₁₀ nonattainment area.
 - d. This facility is not subject to any current NSPS.
 - e. This facility is not subject to any current NESHAP standards except 40 CFR 61, Subpart M, National Emission Standard for Asbestos.
 - f. This source is not a Title IV affected source, nor a solid waste combustion unit.
 - g. This source is not an EPA designated Title V source.

Based on these facts, the Department determined that IMC is a minor source of emissions as defined under the Title V operating permit program. Prior to Permit #3238-01, IMC operations resulted in emissions of PM, NO_x, and CO which exceeded the applicable Title V major source permitting threshold(s); therefore, IMC was a Title V major source and received final and effective Title V Operating Permit #OP3238-00 on February 26, 2005. However, Permit #3238-01 modified IMC operations to the extent that potential emissions of all regulated pollutants are below the applicable Title V threshold(s) making IMC a minor source of emissions as defined under the Title V permit program. Based on this permit action, the Department revoked Title V Operating Permit #OP3238-00 on June 21, 2005.

III. BACT Determination

A BACT determination is required for each new or altered source. IMC shall install on the new or altered source the maximum air pollution control capability, which is technically practicable and economically feasible, except that BACT shall be utilized.

BACT is defined as an emission limitation, based on the maximum degree of reduction for each pollutant subject to regulation that would be emitted from a new or modified source for which the Department, on a case-by-case basis, taking into account energy, environmental, and economic impacts, and other costs, determines is achievable for the new or modified unit through application of control(s). Under various circumstances, the Department may prescribe a design, equipment, work practice, operational standard, or a combination thereof, in lieu of an emission limit, to require the application of BACT.

A BACT analysis was submitted by IMC in Permit Application #3238-02 requesting that the Department require the top control of fabric filter baghouse control for the affected units. In the following analysis, the Department also addressed some other available methods of controlling PM/PM₁₀ emissions resulting from changes to the grain receiving (barley) and product load-out material handling processes at the plant.

The Department reviewed the proposed control methods, as well as previous BACT determinations for similar sources.

Material Handling (Barley, Malt, and Salable Malt By-Product) BACT Analysis for PM/PM₁₀

Similar to Permit #3238-01, in Permit Application #3238-02, IMC proposed the use of fabric filter baghouse control as the affected material handling (grain receiving and product load-out) PM/PM₁₀ BACT control strategy. However, since IMC did propose changes to the previous baghouse control strategy (the addition of two new process specific baghouses) and because BACT is an ever-evolving process, the Department conducted a grain receiving and product load-out BACT analysis for the proposed permit modification.

Available control technologies/strategies for the collection of PM/PM₁₀ from the affected material handling operations include the use of ESPs, Wet Scrubbers, and Baghouses. All of these control technologies/strategies are technically feasible and capable of significant PM/PM₁₀ emission reductions; however, in Permit Application #3238-02, IMC proposed the use of fabric filter baghouse control. In addition, as required under all previous permits through the application of BACT, all barley preparation operations will be housed in the headhouse, all unloading of barley shipments will be accomplished utilizing underground hoppers, the loading of all malt and salable malt by-product for shipment will utilize covered conveyors, and each material transfer point for grain receiving and off-loading will incorporate an enclosure (at least 3-sided) for fugitive emission control.

Because fabric filter baghouse control technologies are capable of achieving the currently permitted allowable PM/PM₁₀ emission rate of 0.010 gr/dscf from the process baghouses, are technically feasible, and are commonly used for sources of this type, the Department determined that the use of a fabric filter baghouse control with appropriate pick-up points, 3-sided enclosures at all material transfer locations, headhouse enclosure for barley preparation processes, and covered material transfer conveyors remains BACT, in this case. A complete PM/PM₁₀ BACT analysis is contained in the application for Permit #3238-00 and is available from the Department upon request. PM/PM₁₀ emissions from IMC material handling operations did not appreciably change from the initial permit action; therefore, the Department determined that the PM/PM₁₀ BACT analysis contained in the initial application remains appropriate and in compliance with permit application requirements.

The control options selected have controls and control costs comparable to other recently permitted similar sources and are capable of achieving the appropriate emission standards.

IV. Emission Inventory

Emission Source	tons/year					
	PM	PM ₁₀	NO _x	CO	VOC	SO _x
Main Process Baghouse (BF01) (66,800 dscfm)	50.16	25.08	0.00	0.00	0.00	0.00
Grain Receiving Baghouse (BF02) (7,250 dscfm)	5.44	2.72	0.00	0.00	0.00	0.00
Product Load-Out Baghouse (BF03) (3,480 dscfm)	2.61	1.31	0.00	0.00	0.00	0.00
MOCO Heater #1 (53.4 MMBtu/hr)	1.74	1.74	22.93	19.26	1.26	0.14
Johnston Heater #1 (25.12 MMBtu/hr)	0.82	0.82	10.79	9.06	0.59	0.06
Johnston Heater #2 (25.12 MMBtu/hr)	0.82	0.82	10.79	9.06	0.59	0.06
HEATEC Heater #1 (25 MMBtu/hr)	0.82	0.82	5.37	9.02	0.59	0.06
HEATEC Heater #2 (42 MMBtu/hr)	1.37	1.37	9.02	15.15	0.99	0.11
Future Plant Heater (48 MMBtu/hr)	1.57	1.57	10.29	17.31	1.13	0.12
Elemental Sulfur Burning – Kiln Operations	0.00	0.00	0.00	0.00	0.00	36.50
Fugitive: Grain Receiving	0.80	0.18	0.00	0.00	0.00	0.00
Fugitive: Kiln Operations	25.84	23.12	0.00	0.00	0.00	0.00
Fugitive: Load-Out Operations	1.17	0.39	0.00	0.00	0.00	0.00
Fugitive: Vehicle Traffic	0.75	0.43	0.00	0.00	0.00	0.00
Total Emissions:	93.91	60.36	69.19	78.86	5.16	37.06

Main Process Baghouse (BF01) (66,800 dscfm)

Air Flow Capacity: 66,800 dscfm (Company Information)
 Operating Hours: 8760 hr/yr

PM Emissions

Emission Factor: 0.020 gr/dscf (EPA Baghouse Emission Factor)
 Calculations: $0.020 \text{ gr/dscf} * 66,800 \text{ dscf/min} * 60 \text{ min/hr} * 1 \text{ lb/7000 gr} = 11.45 \text{ lb/hr}$
 $5.73 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 50.16 \text{ ton/yr}$

PM₁₀ Emissions

Emission Factor: 0.010 gr/dscf (Permit Limit)
 Calculations: $0.010 \text{ gr/dscf} * 66,800 \text{ dscf/min} * 60 \text{ min/hr} * 1 \text{ lb/7000 gr} = 5.73 \text{ lb/hr}$
 $5.73 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 25.08 \text{ ton/yr}$

Grain Receiving Baghouse (BF02) (7,250 dscfm)

Air Flow Capacity: 7250 dscfm (Company Information)
 Operating Hours: 8760 hr/yr

PM Emissions

Emission Factor: 0.020 gr/dscf (EPA Baghouse Emission Factor)
 Calculations: $0.020 \text{ gr/dscf} * 7250 \text{ dscf/min} * 60 \text{ min/hr} * 1 \text{ lb/7000 gr} = 1.24 \text{ lb/hr}$
 $1.24 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 5.44 \text{ ton/yr}$

PM₁₀ Emissions

Emission Factor: 0.010 gr/dscf (Permit Limit)
 Calculations: $0.010 \text{ gr/dscf} * 7250 \text{ dscf/min} * 60 \text{ min/hr} * 1 \text{ lb/7000 gr} = 0.62 \text{ lb/hr}$
 $0.62 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 2.72 \text{ ton/yr}$

Product Load-Out Baghouse (BF03) (3,480 dscfm)

Air Flow Capacity: 3480 dscfm (Company Information)
Operating Hours: 8760 hr/yr

PM Emissions

Emission Factor: 0.020 gr/dscf (EPA Baghouse Emission Factor)
Calculations: $0.020 \text{ gr/dscf} * 3480 \text{ dscf/min} * 60 \text{ min/hr} * 1 \text{ lb/7000 gr} = 0.60 \text{ lb/hr}$
 $0.60 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 2.61 \text{ ton/yr}$

PM₁₀ Emissions

Emission Factor: 0.010 gr/dscf (Permit Limit)
Calculations: $0.010 \text{ gr/dscf} * 3480 \text{ dscf/min} * 60 \text{ min/hr} * 1 \text{ lb/7000 gr} = 0.30 \text{ lb/hr}$
 $0.30 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 1.31 \text{ ton/yr}$

MOCO Heater #1 (53.4 MMBtu/hr)

Heat Input Capacity: 53.4 MMBtu/hr (Company Information)
Natural Gas Heating Value: 1020 MMBtu/MMscf (AP-42, Chapter 1.4)
Operating Hours: 8760 hr/yr (Annual Maximum)

PM Emissions

Emission Factor: 7.6 lb/MMscf (AP-42, Table 1.4-2)
Calculations: $7.6 \text{ lb/MMscf} * 1 \text{ MMscf/1020 MMBtu} * 53.4 \text{ MMBtu/hr} = 0.40 \text{ lb/hr}$
 $0.40 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 1.74 \text{ ton/yr}$

PM₁₀ Emissions

Emission Factor: 7.6 lb/MMscf (AP-42, Table 1.4-2)
Calculations: $7.6 \text{ lb/MMscf} * 1 \text{ MMscf/1020 MMBtu} * 53.4 \text{ MMBtu/hr} = 0.40 \text{ lb/hr}$
 $0.40 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 1.74 \text{ ton/yr}$

NO_x Emissions

Emission Factor: 100 lb/MMscf (AP-42, Table 1.4-2)
Calculations: $100 \text{ lb/MMscf} * 1 \text{ MMscf/1020 MMBtu} * 53.4 \text{ MMBtu/hr} = 5.24 \text{ lb/hr}$
 $5.24 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 22.93 \text{ ton/yr}$

CO Emissions

Emission Factor: 84 lb/MMscf (AP-42, Table 1.4-2)
Calculations: $84 \text{ lb/MMscf} * 1 \text{ MMscf/1020 MMBtu} * 53.4 \text{ MMBtu/hr} = 4.40 \text{ lb/hr}$
 $4.40 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 19.26 \text{ ton/yr}$

VOC Emissions

Emission Factor: 5.5 lb/MMscf (AP-42, Table 1.4-2)
Calculations: $5.5 \text{ lb/MMscf} * 1 \text{ MMscf/1020 MMBtu} * 53.4 \text{ MMBtu/hr} = 0.29 \text{ lb/hr}$
 $0.29 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 1.26 \text{ ton/yr}$

SOx Emissions

Emission Factor: 0.6 lb/MMscf (AP-42, Table 1.4-2)

Calculations: $0.6 \text{ lb/MMscf} * 1 \text{ MMscf}/1020 \text{ MMBtu} * 53.4 \text{ MMBtu/hr} = 0.03 \text{ lb/hr}$
 $0.03 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 0.14 \text{ ton/yr}$

Johnston Heater #1 (25.12 MMBtu/hr)

PM Emissions

Emission Factor: 7.6 lb/MMscf (AP-42, Table 1.4-2)

Calculations: $7.6 \text{ lb/MMscf} * 1 \text{ MMscf}/1020 \text{ MMBtu} * 25.12 \text{ MMBtu/hr} = 0.19 \text{ lb/hr}$
 $0.19 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 0.82 \text{ ton/yr}$

PM₁₀ Emissions

Emission Factor: 7.6 lb/MMscf (AP-42, Table 1.4-2)

Calculations: $7.6 \text{ lb/MMscf} * 1 \text{ MMscf}/1020 \text{ MMBtu} * 25.12 \text{ MMBtu/hr} = 0.19 \text{ lb/hr}$
 $0.19 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 0.82 \text{ ton/yr}$

NOx Emissions

Emission Factor: 100 lb/MMscf (AP-42, Table 1.4-2)

Calculations: $100 \text{ lb/MMscf} * 1 \text{ MMscf}/1020 \text{ MMBtu} * 25.12 \text{ MMBtu/hr} = 2.46 \text{ lb/hr}$
 $2.46 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 10.79 \text{ ton/yr}$

CO Emissions

Emission Factor: 84 lb/MMscf (AP-42, Table 1.4-2)

Calculations: $84 \text{ lb/MMscf} * 1 \text{ MMscf}/1020 \text{ MMBtu} * 25.12 \text{ MMBtu/hr} = 2.07 \text{ lb/hr}$
 $2.07 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 9.06 \text{ ton/yr}$

VOC Emissions

Emission Factor: 5.5 lb/MMscf (AP-42, Table 1.4-2)

Calculations: $5.5 \text{ lb/MMscf} * 1 \text{ MMscf}/1020 \text{ MMBtu} * 25.12 \text{ MMBtu/hr} = 0.14 \text{ lb/hr}$
 $0.20 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 0.59 \text{ ton/yr}$

SOx Emissions

Emission Factor: 0.6 lb/MMscf (AP-42, Table 1.4-2)

Calculations: $0.6 \text{ lb/MMscf} * 1 \text{ MMscf}/1020 \text{ MMBtu} * 25.12 \text{ MMBtu/hr} = 0.01 \text{ lb/hr}$
 $0.02 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 0.06 \text{ ton/yr}$

Johnston Heater #2 (25.12 MMBtu/hr)

PM Emissions

Emission Factor: 7.6 lb/MMscf (AP-42, Table 1.4-2)

Calculations: $7.6 \text{ lb/MMscf} * 1 \text{ MMscf}/1020 \text{ MMBtu} * 25.12 \text{ MMBtu/hr} = 0.19 \text{ lb/hr}$
 $0.19 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 0.82 \text{ ton/yr}$

PM₁₀ Emissions

Emission Factor: 7.6 lb/MMscf (AP-42, Table 1.4-2)
Calculations: $7.6 \text{ lb/MMscf} * 1 \text{ MMscf}/1020 \text{ MMBtu} * 25.12 \text{ MMBtu/hr} = 0.19 \text{ lb/hr}$
 $0.19 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 0.82 \text{ ton/yr}$

NO_x Emissions

Emission Factor: 100 lb/MMscf (AP-42, Table 1.4-2)
Calculations: $100 \text{ lb/MMscf} * 1 \text{ MMscf}/1020 \text{ MMBtu} * 25.12 \text{ MMBtu/hr} = 2.46 \text{ lb/hr}$
 $2.46 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 10.79 \text{ ton/yr}$

CO Emissions

Emission Factor: 84 lb/MMscf (AP-42, Table 1.4-2)
Calculations: $84 \text{ lb/MMscf} * 1 \text{ MMscf}/1020 \text{ MMBtu} * 25.12 \text{ MMBtu/hr} = 2.07 \text{ lb/hr}$
 $2.07 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 9.06 \text{ ton/yr}$

VOC Emissions

Emission Factor: 5.5 lb/MMscf (AP-42, Table 1.4-2)
Calculations: $5.5 \text{ lb/MMscf} * 1 \text{ MMscf}/1020 \text{ MMBtu} * 25.12 \text{ MMBtu/hr} = 0.14 \text{ lb/hr}$
 $0.14 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 0.59 \text{ ton/yr}$

SO_x Emissions

Emission Factor: 0.6 lb/MMscf (AP-42, Table 1.4-2)
Calculations: $0.6 \text{ lb/MMscf} * 1 \text{ MMscf}/1020 \text{ MMBtu} * 25.12 \text{ MMBtu/hr} = 0.01 \text{ lb/hr}$
 $0.01 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 0.06 \text{ ton/yr}$

HEATEC Heater #1 (25 MMBtu/hr)

PM Emissions

Emission Factor: 7.6 lb/MMscf (AP-42, Table 1.4-2)
Calculations: $7.6 \text{ lb/MMscf} * 1 \text{ MMscf}/1020 \text{ MMBtu} * 25 \text{ MMBtu/hr} = 0.19 \text{ lb/hr}$
 $0.19 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 0.82 \text{ ton/yr}$

PM₁₀ Emissions

Emission Factor: 7.6 lb/MMscf (AP-42, Table 1.4-2)
Calculations: $7.6 \text{ lb/MMscf} * 1 \text{ MMscf}/1020 \text{ MMBtu} * 25 \text{ MMBtu/hr} = 0.19 \text{ lb/hr}$
 $0.19 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 0.82 \text{ ton/yr}$

NO_x Emissions

Emission Factor: 50 lb/MMscf (AP-42, Table 1.4-2: 50% control for Dry-Low NO_x Technology)
Calculations: $50 \text{ lb/MMscf} * 1 \text{ MMscf}/1020 \text{ MMBtu} * 25 \text{ MMBtu/hr} = 1.23 \text{ lb/hr}$
 $1.225 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 5.37 \text{ ton/yr}$

CO Emissions

Emission Factor: 84 lb/MMscf (AP-42, Table 1.4-2)
Calculations: $84 \text{ lb/MMscf} * 1 \text{ MMscf}/1020 \text{ MMBtu} * 25 \text{ MMBtu/hr} = 2.06 \text{ lb/hr}$
 $2.06 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 9.02 \text{ ton/yr}$

VOC Emissions

Emission Factor: 5.5 lb/MMscf (AP-42, Table 1.4-2)
Calculations: $5.5 \text{ lb/MMscf} * 1 \text{ MMscf}/1020 \text{ MMBtu} * 25.12 \text{ MMBtu/hr} = 0.13 \text{ lb/hr}$
 $0.13 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 0.59 \text{ ton/yr}$

SOx Emissions

Emission Factor: 0.6 lb/MMscf (AP-42, Table 1.4-2)
Calculations: $0.6 \text{ lb/MMscf} * 1 \text{ MMscf}/1020 \text{ MMBtu} * 25.12 \text{ MMBtu/hr} = 0.01 \text{ lb/hr}$
 $0.01 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 0.06 \text{ ton/yr}$

HEATEC Heater #2 (42 MMBtu/hr)

PM Emissions

Emission Factor: 7.6 lb/MMscf (AP-42, Table 1.4-2)
Calculations: $7.6 \text{ lb/MMscf} * 1 \text{ MMscf}/1020 \text{ MMBtu} * 42 \text{ MMBtu/hr} = 0.31 \text{ lb/hr}$
 $0.31 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 1.37 \text{ ton/yr}$

PM₁₀ Emissions

Emission Factor: 7.6 lb/MMscf (AP-42, Table 1.4-2)
Calculations: $7.6 \text{ lb/MMscf} * 1 \text{ MMscf}/1020 \text{ MMBtu} * 42 \text{ MMBtu/hr} = 0.31 \text{ lb/hr}$
 $0.31 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 1.37 \text{ ton/yr}$

NOx Emissions

Emission Factor: 50 lb/MMscf (AP-42, Table 1.4-2: 50% control for Dry-Low NOx Technology)
Calculations: $50 \text{ lb/MMscf} * 1 \text{ MMscf}/1020 \text{ MMBtu} * 42 \text{ MMBtu/hr} = 2.06 \text{ lb/hr}$
 $2.06 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 9.02 \text{ ton/yr}$

CO Emissions

Emission Factor: 84 lb/MMscf (AP-42, Table 1.4-2)
Calculations: $84 \text{ lb/MMscf} * 1 \text{ MMscf}/1020 \text{ MMBtu} * 42 \text{ MMBtu/hr} = 3.46 \text{ lb/hr}$
 $3.46 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 15.15 \text{ ton/yr}$

VOC Emissions

Emission Factor: 5.5 lb/MMscf (AP-42, Table 1.4-2)
Calculations: $5.5 \text{ lb/MMscf} * 1 \text{ MMscf}/1020 \text{ MMBtu} * 42 \text{ MMBtu/hr} = 0.23 \text{ lb/hr}$
 $0.23 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 0.99 \text{ ton/yr}$

SOx Emissions

Emission Factor: 0.6 lb/MMscf (AP-42, Table 1.4-2)
Calculations: $0.6 \text{ lb/MMscf} * 1 \text{ MMscf}/1020 \text{ MMBtu} * 42 \text{ MMBtu/hr} = 0.02 \text{ lb/hr}$
 $0.02 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 0.11 \text{ ton/yr}$

Future Plant Heater (48 MMBtu/hr)

PM Emissions

Emission Factor: 7.6 lb/MMscf (AP-42, Table 1.4-2)
Calculations: $7.6 \text{ lb/MMscf} * 1 \text{ MMscf}/1020 \text{ MMBtu} * 48 \text{ MMBtu/hr} = 0.36 \text{ lb/hr}$
 $0.36 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 1.57 \text{ ton/yr}$

PM₁₀ Emissions

Emission Factor: 7.6 lb/MMscf (AP-42, Table 1.4-2)
Calculations: $7.6 \text{ lb/MMscf} * 1 \text{ MMscf}/1020 \text{ MMBtu} * 48 \text{ MMBtu/hr} = 0.36 \text{ lb/hr}$
 $0.36 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 1.57 \text{ ton/yr}$

NOx Emissions

Emission Factor: 50 lb/MMscf (AP-42, Table 1.4-2: 50% control for Dry-Low NOx Technology)
Calculations: $50 \text{ lb/MMscf} * 1 \text{ MMscf}/1020 \text{ MMBtu} * 48 \text{ MMBtu/hr} = 2.35 \text{ lb/hr}$
 $2.35 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 10.29 \text{ ton/yr}$

CO Emissions

Emission Factor: 84 lb/MMscf (AP-42, Table 1.4-2)
Calculations: $84 \text{ lb/MMscf} * 1 \text{ MMscf}/1020 \text{ MMBtu} * 48 \text{ MMBtu/hr} = 3.95 \text{ lb/hr}$
 $3.95 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 17.31 \text{ ton/yr}$

VOC Emissions

Emission Factor: 5.5 lb/MMscf (AP-42, Table 1.4-2)
Calculations: $5.5 \text{ lb/MMscf} * 1 \text{ MMscf}/1020 \text{ MMBtu} * 48 \text{ MMBtu/hr} = 0.26 \text{ lb/hr}$
 $0.26 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 1.13 \text{ ton/yr}$

SOx Emissions

Emission Factor: 0.6 lb/MMscf (AP-42, Table 1.4-2)
Calculations: $0.6 \text{ lb/MMscf} * 1 \text{ MMscf}/1020 \text{ MMBtu} * 48 \text{ MMBtu/hr} = 0.03 \text{ lb/hr}$
 $0.03 \text{ lb/hr} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 0.12 \text{ ton/yr}$

Elemental Sulfur Burning – Kiln Operations

Molecular Weight (Sulfur): 32 lb/mol
Molecular Weight (SO₂): 64 lb/mol
Batch Process Duration: 36 hrs/batch (Company Information)
Sulfur Burning Duration - Batch Process: 3 hr/kiln batch (Company Information)
Maximum Sulfur Burned/Batch: 200 lb/kiln batch (Permit Limit)
Barley – Sulfur Absorption: 75% (Company Information – Conservative Estimate)

Kiln Throughput Capacity: 380 ton/batch/kiln (Company Information)
Number Of Kilns: 3 kilns
Operating Hours: 8760 hr/yr

Combined Total Barley Throughput Capacity (3 Kilns)

Calculations: $380 \text{ ton/batch/kiln} * 1 \text{ batch/36 hr/kiln} * 8760 \text{ hr/yr} * 3 \text{ kilns} = 277,400 \text{ ton/yr}$

Total Number of Batches Processed/Year (3 Kilns)

Calculations: $277,400 \text{ ton/yr} * 1 \text{ batch/380 tons} = 730 \text{ batches/yr}$ (combined 3 kiln capacity)

Sulfur Burning Duration:

Calculations: $730 \text{ batches/yr} * 3 \text{ hr S burning/batch} = 2190 \text{ hr S burning/yr}$

SO_x Emissions:

Calculations: $200 \text{ lb/kiln batch} * 1 \text{ kiln batch/3 hrs} * 64 \text{ lb SO}_2/32 \text{ lb S} * (1-0.75) = 33.33 \text{ lb/hr}$
 $33.33 \text{ lb/hr} * 3 \text{ hr/batch} * 730 \text{ batches/yr} * 0.0005 \text{ ton/lb} = 36.50 \text{ ton/yr}$

Fugitive Emissions: Grain Receiving Pits

Barley Density: 48 lb/bu

Process Rate: 19,000,000 bu/yr (Proposed Limit)

Conversion: $48 \text{ lb/bu} * 19,000,000 \text{ bu/yr} * 0.0005 \text{ ton/lb} = 456,000 \text{ ton/yr}$ (Permit Limit)

PM Emissions

Emission Factor: 0.035 lb/ton (AP-42, Table 9.9.1-1, SCC03-02-005-52, Hopper Truck)

Emission Control: 90% (3-sided enclosure)

Calculations: $0.035 \text{ lb/ton} * 456,000 \text{ ton/yr} * (1-0.9) * 0.0005 \text{ ton/lb} = 0.80 \text{ ton/yr}$

PM₁₀ Emissions

Emission Factor: 0.0078 lb/ton (AP-42, Table 9.9.1-1, SCC03-02-005-52, Hopper Truck)

Emission Control: 90% (3-sided enclosure)

Calculations: $0.0078 \text{ lb/ton} * 456,000 \text{ ton/yr} * (1-0.9) * 0.0005 \text{ ton/lb} = 0.18 \text{ ton/yr}$

Fugitive Emissions: Malt Kilns (3)

Malt Density: 34 lb/bu

Process Rate: 16,000,000 bu/yr (Company Information)

Conversion: $34 \text{ lb/bu} * 16,000,000 \text{ bu/yr} * 0.0005 \text{ ton/lb} = 272,000 \text{ ton/yr}$

PM Emissions

Emission Factor: 0.19 lb/ton (AP-42, Table 9.9.1-2)

Calculations: $0.19 \text{ lb/ton} * 272,000 \text{ ton/yr} * 0.0005 \text{ ton/lb} = 25.84 \text{ ton/yr}$

PM₁₀ Emissions

Emission Factor: 0.17 lb/ton (AP-42, Table 9.9.1-2)

Calculations: 0.17 lb/ton * 272,000 ton/yr * 0.0005 ton/lb = 23.12 ton/yr

Fugitive Emissions: Malt Load-Out (2 spouts @ 190 tph & 2 spouts at 100 tph)

Process Rate: 272,000 ton/yr (Malt Production Capacity)

PM Emissions

Emission Factor: 0.086 lb/ton (AP-42, Table 9.9.1-1, SCC03-02-005-52, Truck)

Emission Control: 90% (3-sided enclosure/load-out spout)

Calculations: 0.086 lb/ton * 272,000 ton/yr * (1-0.9) * 0.0005 ton/lb = 1.17 ton/yr

PM₁₀ Emissions

Emission Factor: 0.029 lb/ton (AP-42, Table 9.9.1-1, SCC03-02-005-52, Truck)

Emission Control: 90% (3-sided enclosure/load-out spout)

Calculations: 0.029 lb/ton * 272,000 ton/yr * (1-0.9) * 0.0005 ton/lb = 0.39 ton/yr

Fugitive Emissions: Vehicle Traffic

Assumptions:

$$E = k (sL/2)^{0.65} * (W/3)^{1.5} \quad (\text{AP-42, Section 13.2.1.3, 10/02})$$

Where:

k = 0.028 Particle size multiplier for PM₁₀ and units of interest, lb/VMT (AP-42, Section 13.2.1.3, 10/02)

k = 0.016 Particle size multiplier for PM₁₀ and units of interest, lb/VMT (AP-42, Section 13.2.1.3, 10/02)

sL = 0.5 Road surface silt loading, g/m² (worst case default; AP-42, Section 13.2.1.3, 10/02)

W = 20 Average vehicle weight, tons (assumed)

E = 0.196 PM emission factor, lb/VMT (calculated)

E = 0.112 PM₁₀ emission factor, lb/VMT (calculated)

n = 2 Number of trucks per hour (Company Information)

VMT = 0.44 Vehicle miles traveled (calculated from site plan, Permit #3238-00)

PM Emissions

Emission Factor: 0.172 lb/hr (calculated PM emission rate)

Calculations: 0.172 lb/hr * 8760 hr/yr * 0.0005 ton/lb = 0.75 ton/yr

PM₁₀ Emissions

Emission Factor: 0.098 lb/hr (calculated PM₁₀ emission rate)

Calculations: 0.098 lb/hr * 8760 hr/yr * 0.0005 ton/lb = 0.43 ton/yr

V. Existing Air Quality

The air quality of the proposed area of operation is considered attainment/unclassified for all pollutants. Until recently, a narrow area along 10th Avenue South (bounded by 9th Avenue South on the north, 11th Avenue South on the south, 54th Street South on the east and 2nd Street South on the west) was classified as a non-attainment area for CO but has since been re-designated to attainment area status under a limited maintenance plan (LMP). This re-designation became effective on July 8, 2002. Because the current permit action will not result in any change to permitted CO emissions from the IMC facility, the Department believes that the current permit action will not result in any impacts to the LMP CO attainment area. Further, since the current permit will result in only a very minor increase in controlled potential PM/PM₁₀ emissions from the IMC facility, the Department is confident that the current permit action will not result in any significant PM/PM₁₀ impacts to the area of operations. The ambient air impact analysis contained in Section VI of this permit analysis provides a more detailed discussion of impacts resulting from the current permit action.

VI. Ambient Air Impact Analysis

The Department determined, based on ambient air modeling, that the impact from this permitting action will be minor. The Department believes the current permit action will not result in IMC operations that would cause or contribute to a violation of any ambient air quality standard or PSD increment.

The maximum estimated emissions from the total proposed IMC project, including the current permit action, are approximately 69.2 tpy of NO_x, 78.6 tpy of CO, 60.36 tpy of PM₁₀, 4.79 tpy of VOCs, and 36.72 tpy of SO₂. The air quality classification for Great Falls is “Unclassifiable or Better than National Standards” (40 CFR 81.327) for all pollutants. A narrow area along 10th Avenue South (bounded by 9th Avenue South on the north, 11th Avenue South on the south, 54th Street South on the east and 2nd Street South on the west) was previously classified as a non-attainment area for CO but has since been upgraded to an attainment area under a LMP as of July 8, 2002.

Modeling Analysis

Bison Engineering Inc. (Bison) submitted modeling on behalf of IMC to demonstrate compliance with the Montana and National Ambient Air Quality Standards (MAAQS and NAAQS) and the Class II PSD increments for PM₁₀. The Class II increment analysis was performed because the minor source baseline dates for PM₁₀ have been established in the area. Class I increment modeling was performed for previous permit applications, and was not repeated for this minor permit change.

The ISC-PRIME model was used along with five years of meteorological data (1987-1991) collected at the Great Falls, International Airport National Weather Station. This data has been previously reviewed and approved by the Department. Building downwash effects from the facility buildings were calculated using the EPA developed Building Profile Input Program for use with the ISC-PRIME (BPIP-PRIME). The receptor grid elevations were derived from digital elevation model (DEM) files using United States Geological Survey (USGS) 7.5-minute series (1:24,000 scale) digitized topographical maps.

Because the current permit action only addresses PM₁₀ sources, modeling for the other pollutants has not been repeated or reviewed. Modeled 24-hour PM₁₀ impacts from the two baghouses exceeded the modeling significance levels, making additional modeling necessary for demonstrating compliance with the NAAQS, MAAQS, and PSD increments. The radius of influence for the baghouse project, based on 24-hour PM₁₀ impacts, was 0.3 kilometers centered on the receiving baghouse (BF02).

Table 1 identifies the emission rates from the IMC facility baghouses. These emission rates were used in the modeling. Table 2 lists the modeling parameters for the baghouses. Modeling parameters for the main baghouse (BF01) changed slightly from the previous modeling submitted under Permit #3238-01. Table 2 lists the modeled emission rates for the baghouses.

Table 1: IMC Baghouse PM₁₀ Emission Rates

Source Identification	PM ₁₀ , Short-Term Emissions (lb/hr)	PM ₁₀ , Annual Emissions (tpy)
Main Baghouse (BF01)	5.726	25.08
Receiving Baghouse (BF02)	0.621	2.72
Loadout Baghouse (BF03)	0.298	1.31

Table 2: IMC Baghouse Modeling Parameters

Source ID	UTM Easting (meters)	Point Source Model Parameters				Exit Vel. (ft/sec)	Stack Diameter (feet)
		UTM Northing (meters)	Base Elev. (feet)	Stack Height (feet)	Stack Temp. (deg. K)		
Baghouse 1	480100	5265541	3461.3	42.0	100.0	80.2	15.6
Baghouse 2	480100	5265580.5	3461.3	42.0	100.0	80.2	15.6
Baghouse 3	480275.9	5265596.5	3460.0	16.0	70.0	57.0	4.7

COMPLIANCE DEMONSTRATION

The NAAQS/MAAQs demonstration and Class I/II analyses were performed with the following sources: Montana Refining Company (MRC), Malmstrom Air Force Base, Agri-Technology Corporation, and Montana First Megawatts Project (MFMP). The NAAQS/MAAQs analyses for PM₁₀ were conducted using the potential emissions from IMC and the non-IMC sources. The results NAAQS/MAAQs are summarized in Table 3.

Table 3: NAAQS/MAAQs Ambient Modeling Results

Pollutant	Avg. Period	Modeled Conc. (µg/m ³)	Background Conc. (µg/m ³)	Ambient Conc. (µg/m ³)	NAAQS (µg/m ³)	% of NAAQS	MAAQs (µg/m ³)	% of MAAQS
PM ₁₀	24-hr	25.6	61	86.6	150	58	150	58
	Annual	8.51	21	29.5	50	59	50	59

Minor source baseline dates have been triggered for PM₁₀ in Great Falls. Although this facility is not subject to PSD, IMC prepared a cumulative increment analysis to check for continued compliance with the Class I and II increments at the Department's request. The results for the Class I and Class II demonstrations are summarized in Table 4.

Table 4: Class I and II Modeling Results

Pollutant	Avg. Period	Class II Modeled Conc. (µg/m ³)	Class II Increment (µg/m ³)	% Class II Increment Consumed	Class I Modeled Conc. (µg/m ³)	Class I ⁽¹⁾ Increment (µg/m ³)	% Class I Increment Consumed
PM ₁₀	24-hr	25.6	30	85.3	.09	8	1.1
	Annual	8.47	17	49.8	.005	4	0.1

(1) Class I model results from previous modeling submittal.

According to the permit application forms for the current permit action, all three baghouses (BF01, BF02, and BF03) have unobstructed vertical exhausts (i.e., no "rain-caps"); therefore, the baghouses

were modeled with the open vertical stacks. Since this is atypical for baghouse stacks of the type proposed, and because this aspect of the model may significantly impact the compliance demonstration, the current permit action includes enforceable stack conditions ensuring that open vertical stacks will be used for affected operations.

As shown by this modeling demonstration, the modeled impacts from the IMC project are not predicted to contribute to a violation of the NAAQS or any PSD increment.

VII. Taking or Damaging Implication Analysis

As required by 2-10-105, MCA, the Department conducted a private property taking and damaging assessment and determined there are no taking or damaging implications.

VIII. Environmental Assessment

An environmental assessment, required by the Montana Environmental Policy Act, was completed for this project. A copy is attached.

DEPARTMENT OF ENVIRONMENTAL QUALITY
Permitting and Compliance Division
Air and Waste management Bureau
P.O. Box 200901, Helena, Montana 59620
(406) 444-3490

FINAL ENVIRONMENTAL ASSESSMENT (EA)

Issued To: International Malting Company, LLC – Great Falls
P.O. Box 712
Milwaukee, WI 53201

Air Quality Permit # 3238-02

Preliminary Determination Issued: 08/09/05

Department Decision Issued: 08/25/05

Permit Final: 09/10/05

1. *Legal Description of Site:* The IMC facility is located approximately 2 miles north of Great Falls, Montana, and approximately ½ mile west of Black Eagle Road. The legal description of the facility site is the NE¼ of the SE¼ of Section 30, Township 21 North, Range 4 East, in Cascade County, Montana.
2. *Description of Project:* IMC is proposing the construction and operation of a barley malt manufacturing plant with a malt and salable malt by-product production capacity of 16 million bushels per year. Construction and operation of the proposed malting plant would occur in two phases. After construction of Phase I, the malting plant would have the capacity to produce from 8 to 10 million bushels of malt and salable malt by-product per year. After construction of Phase II, the malting plant capacity would increase to a maximum of 16 million bushels of malt and salable malt by-product per year. IMC would commence Phase II operations within three years of the commencement of Phase I operations. The current permit action would be a permit modification and would accommodate various proposed changes to the previously permitted IMC facility.

Under Permit #3238-01, IMC proposed the use of one main process baghouse incorporating various pick-up points to control emissions from all material handling operations. Under the current permit action, IMC proposed the installation and operation of 2 new fabric filter baghouse control units for grain receiving and product load-out operations, respectively. The baghouse controlling grain receiving operations would have a maximum nominal flow rate of 7250 dscfm and a PM₁₀ emission limit of 0.01 gr/dscf resulting in the potential to emit 2.72 tpy of PM₁₀. The product load-out baghouse would have a maximum nominal flow rate of 3480 dscfm and a PM₁₀ emission limit of 0.01 gr/dscf, resulting in the potential to emit 1.31 tpy of PM₁₀.

In addition, the main process baghouse (BF01) flow rate used in the modeling analysis conducted for Permit #3238-01 was incorrectly reported as 59,335 acfm. The correct flow rate for the affected unit under Permit #3238-01 and the current permit action would be 77,404 acfm (66,800 dscfm). The modeling analysis submitted for the current permit action would address this correction. A summary of the ambient air quality impact analysis would be contained in Section VI of the Permit Analysis to this permit.

3. *Objectives of Project:* The overall objective of the proposed project would not change the initial IMC objective to construct and operate a barley malt manufacturing plant to produce malt product for sale and use in various industries world-wide including, but not limited to, beer manufacturing.

However, technical factors determined through construction of the facility dictate a minor change in the emission control methodology for grain receiving and product load-out operations from that previously permitted. The objective of the current permit action is to accommodate the needed change in control strategy for these pollutant-emitting activities.

4. *Alternatives Considered:* In addition to the proposed action, the Department also considered the “no-action” alternative. The “no-action” alternative would deny issuance of the air quality preconstruction permit to the proposed facility. However, the Department does not consider the “no-action” alternative to be appropriate because IMC demonstrated compliance with all applicable rules and regulations as required for permit issuance. Therefore, the “no-action” alternative was eliminated from further consideration.
5. *A Listing of Mitigation, Stipulations, and Other Controls:* A list of enforceable conditions, including a BACT analysis, would be included in Permit #3238-02.
6. *Regulatory Effects on Private Property:* The Department considered alternatives to the conditions imposed in this permit as part of the permit development. The Department determined that the permit conditions are reasonably necessary to ensure compliance with applicable requirements, demonstrate compliance with those requirements, and that these conditions do not unduly restrict private property rights.
7. The following table summarizes the potential physical and biological effects of the proposed project on the human environment. The “no-action” alternative was discussed previously.

		Major	Moderate	Minor	None	Unknown	Comments Included
A	Terrestrial and Aquatic Life and Habitats			X			Yes
B	Water Quality, Quantity, and Distribution			X			Yes
C	Geology and Soil Quality, Stability and Moisture			X			Yes
D	Vegetation Cover, Quantity, and Quality			X			Yes
E	Aesthetics			X			Yes
F	Air Quality			X			Yes
G	Unique Endangered, Fragile, or Limited Environmental Resources			X			Yes
H	Demands on Environmental Resource of Water, Air and Energy			X			Yes
I	Historical and Archaeological Sites				X		Yes
J	Cumulative and Secondary Impacts			X			Yes

SUMMARY OF COMMENTS ON POTENTIAL PHYSICAL AND BIOLOGICAL EFFECTS: The following comments have been prepared by the Department.

A. Terrestrial and Aquatic Life and Habitats

The proposed permit modification would not cause any new impacts to terrestrial and aquatic life and habitats that were not already analyzed in the original permit application. Overall, the proposed malting plant would result in minor impacts to terrestrial and aquatic life and habits in the proposed area of operations. A detailed discussion of initial project impacts is included in the environmental assessment (EA) conducted for Permit #3238-00.

B. Water Quality, Quantity, and Distribution

The proposed permit modification would not cause any new impacts to water quality, quantity, and distribution that were not already analyzed in the original permit application. Overall, the proposed malting plant would result in minor impacts to water quality, quantity, and distribution in the proposed area of operations. A detailed discussion of initial project impacts is included in the EA conducted for Permit #3238-00.

C. Geology and Soil Quality, Stability, and Moisture

The proposed permit modification would not cause any new impacts to the geology and soil quality, stability, and moisture content that were not already analyzed in the original permit application. Overall, the proposed malting plant would result in minor impacts to the geology and soil quality, stability, and moisture in the proposed area of operations. A discussion of initial project impacts is included in the EA conducted for Permit #3238-00.

D. Vegetation Cover, Quantity, and Quality

The proposed permit modification would not cause any new impacts to topsoil quality, stability, or moisture content that were not already analyzed in the original permit application. Overall, the proposed malting plant would result in minor impacts to the vegetation cover, quantity, and quality in the proposed area of operations. A detailed discussion of initial project impacts is included in the EA conducted for Permit #3238-00.

E. Aesthetics

The proposed permit modification would not cause any new impacts to the aesthetics of the project area that were not already analyzed in the original permit application. Overall, the proposed malting plant would result in minor impacts to the aesthetics of the proposed area of operations. A detailed discussion of initial project impacts is included in the EA conducted for Permit #3238-00.

F. Air Quality

The Clean Air Act, which was last amended in 1990, requires EPA to set NAAQS for pollutants considered harmful to public health and the environment (Criteria Pollutants: CO, NO_x, Ozone, Lead, PM₁₀, SO_x). The Clean Air Act established two types of NAAQS, Primary and Secondary. Primary Standards are limits set to protect public health, including, but not limited to, the health of “sensitive” populations such as asthmatics, children, and the elderly. Secondary Standards are limits set to protect public welfare, including, but not limited to, protection against decreased visibility, damage to animals, crops, vegetation, and buildings. Primary and Secondary Standards are identical with the exception of Sulfur Dioxide which has a less stringent Secondary Standard. The air quality classification for Great Falls is “Unclassifiable or Better than National Standards” (40 CFR 81.327) for all pollutants. As described in Section V of the permit analysis, a narrow area along 10th Avenue South was previously classified as a non-attainment area for CO but has since been re-designated as attainment under a limited maintenance plan (LMP). This re-designation became effective on July 8, 2002.

The Department determined, based on ambient air modeling, that the impact from the proposed permit action would be minor and that the current permit action would not result in IMC operations that would cause or contribute to a violation of any ambient air quality standard. A complete ambient air quality impact analysis would be contained in Section VI of the permit analysis to this permit.

G. Unique Endangered, Fragile, or Limited Environmental Resources

The proposed permit modification would not cause any new impacts to any unique endangered, fragile, or limited environmental resources in the proposed project area that were not already analyzed in the original permit application. Overall, the proposed malting plant would result in minor impacts to any existing unique endangered, fragile, or limited environmental resources that may be located in the proposed area of operations. A detailed discussion of initial project impacts is included in the EA conducted for Permit #3238-00.

H. Demands on Environmental Resource of Water, Air and Energy

The proposed permit modification would not cause any new impacts on the demands on environmental resources of water, air, and energy that were not already analyzed in the original permit application. Overall, the proposed malting plant would result in minor impacts to the demands on environmental resource of water, air, and energy in the proposed area of operations. A detailed discussion of initial project impacts is included in the EA conducted for Permit #3238-00.

I. Historical and Archaeological Sites

The proposed permit modification would not cause any new impacts to any historical or archaeological sites of the project area that were not already analyzed in the original permit application. Since the initial EA conducted for Permit #3238-00 indicated that no impacts to any historical and archaeological sites in the proposed area of operations would result from the proposed IMC operations, and because the proposed permit modification does not change these impacts, the Department determined that the current permit action would not result in any impacts to any historical and archaeological sites in the proposed area of operation. A detailed discussion of initial project impacts is included in the EA conducted for Permit #3238-00.

J. Cumulative and Secondary Impacts

Overall, the cumulative and secondary impacts from this project on the physical and biological resources of the human environment in the area affected by the current permit application would be minor. The proposed permit modification would not cause any new impacts to any physical and biological resources of the human environment in the project area that were not already analyzed in the original permit application. A detailed discussion of initial project impacts is included in the EA conducted for Permit #3238-00.

8. The following table summarizes the potential economic and social effects of the proposed project on the human environment. The “no-action” alternative was discussed previously.

		Major	Moderate	Minor	None	Unknown	Comments Included
A	Social Structures and Mores			X			Yes
B	Cultural Uniqueness and Diversity			X			Yes
C	Local and State Tax Base and Tax Revenue			X			Yes
D	Agricultural or Industrial Production			X			Yes
E	Human Health			X			Yes
F	Access to and Quality of Recreational and Wilderness Activities			X			Yes
G	Quantity and Distribution of Employment			X			Yes
H	Distribution of Population			X			Yes
I	Demands for Government Services			X			Yes
J	Industrial and Commercial Activity			X			Yes
K	Locally Adopted Environmental Plans and Goals			X			Yes
L	Cumulative and Secondary Impacts			X			Yes

SUMMARY OF COMMENTS ON POTENTIAL ECENOMIC AND SOCIAL EFFECTS: The following comments have been prepared by the Department.

- A. Social Structures and Mores
- B. Cultural Uniqueness and Diversity

The proposed permit modification would not cause any new impacts to any social structures and mores or cultural uniqueness and diversity in the project area that were not already analyzed in the original permit application. Overall, the proposed malting plant would result in minor impacts to the social structures and mores and the cultural uniqueness and diversity of the proposed area of operations. A detailed discussion of initial project impacts is included in the EA conducted for Permit #3238-00.

- C. Local and State Tax Base and Tax Revenue

The proposed permit modification would not cause any new impacts to any local and state tax base and tax revenue of the project area that were not already analyzed in the original permit application. Overall, the proposed malting plant would result in minor impacts to the local tax base and tax revenue in the proposed area of operations. A detailed discussion of initial project impacts is included in the EA conducted for Permit #3238-00.

- D. Agricultural or Industrial Production

The proposed permit modification would not cause any new impacts to any agricultural or industrial production of the project area that were not already analyzed in the original permit application. Overall, the proposed malting plant would result in minor impacts to agricultural and industrial production in the proposed area of operations. A detailed discussion of initial project impacts is included in the EA conducted for Permit #3238-00.

E. Human Health

The proposed permit modification would not cause any new impacts to the health of the human population in the project area that were not already analyzed in the original permit application. Overall, the proposed malting plant would result in minor impacts to human health in the proposed area of operations. A detailed discussion of initial project impacts is included in the EA conducted for Permit #3238-00.

F. Access to and Quality of Recreational and Wilderness Activities

The proposed permit modification would not cause any new impacts to any access to and quality of recreational and wilderness activities of the project area that were not already analyzed in the original permit application. Overall, the proposed malting plant would result in minor impacts to the access to and quality of recreational and wilderness activities in the proposed area of operations. A detailed discussion of initial project impacts is included in the EA conducted for Permit #3238-00.

G. Quantity and Distribution of Employment

H. Distribution of Population

The proposed permit modification would not cause any new impacts to the quantity and distribution of employment or the distribution of population of the project area that were not already analyzed in the original permit application. Overall, the proposed malting plant would result in minor impacts to the quantity and distribution of employment and the distribution of population in the proposed area of operations. A detailed discussion of initial project impacts is included in the EA conducted for Permit #3238-00.

I. Demands for Government Services

The proposed permit modification would not cause any new impacts to the demands for government services that were not already analyzed in the original permit application. Overall, the proposed malting plant would result in minor impacts on the demands for government services. A detailed discussion of initial project impacts is included in the EA conducted for Permit #3238-00.

J. Industrial and Commercial Activity

The proposed permit modification would not cause any new impacts to the industrial and commercial activity of the project area that were not already analyzed in the original permit application. Overall, the proposed malting plant would result in minor impacts to the industrial and commercial activity in the proposed area of operations. A detailed discussion of initial project impacts is included in the EA conducted for Permit #3238-00.

K. Locally Adopted Environmental Plans and Goals

The proposed permit modification would not cause any new impacts to any locally adopted environmental plans and goals of the project area that were not already analyzed in the original permit application. Overall, the proposed malting plant would result in minor impacts to locally adopted environmental plans and goals in the proposed area of operations. A detailed discussion of initial project impacts is included in the EA conducted for Permit #3238-00.

L. Cumulative and Secondary Impacts

Overall, the cumulative and secondary impacts from this project on the social and economic resources of the human environment in the area affected by the current permit application would be minor. The proposed permit modification would not cause any new impacts to any social and economic resources of the human environment in the project area that were not already analyzed in the original permit application. A detailed discussion of initial project impacts is included in the EA conducted for Permit #3238-00.

Recommendation: No EIS is required.

If an EIS is not required, explain why the EA is an appropriate level of analysis: The current permitting action is for the construction and operation of a barley malt manufacturing plant. Permit #3238-01 includes conditions and limitations to ensure the facility would operate in compliance with all applicable rules and regulations. In addition, as discussed in the above EA, there are no significant impacts associated with this proposal.

Other groups or agencies contacted or which may have overlapping jurisdiction: Montana Historical Society – State Historic Preservation Office, Natural Resource Information System – Montana Natural Heritage Program.

Individuals or groups contributing to this EA: Department of Environmental Quality – Air Resources Management Bureau, Montana Historical Society – State Historic Preservation Office, Natural Resource Information System – Montana Natural Heritage Program.

EA prepared by: M. Eric Merchant, MPH

Date: July 28, 2005